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The 1983 Gordon Research Conference on Atomic Physics was held 4-8 July 1983 at Colby-Sawyer College, New London, New Hampshire. It was attended by 147 conferees representing the US, England, Canada, France, West Germany, Finland, the Netherlands, Sweden, and Italy. There were 20 foreign scientists in attendance. Of the 147 participants, 41 represented government laboratories, 4 came from industrial laboratories, and the remainder from universities. The scientific sessions covered many aspects of atomic physics and the related area of spin-aligned hydrogen and helium. The atomic sessions included Collisions and Dielectronic Recombinations, Photoionization of Atoms and Molecules, Cooling and Trapping of Atoms and Ions, as well as New Results in Spectroscopy and Molecular and Continuum States.

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Report

Gordon Research Conference on Atomic Physics

This grant provided financial support for the Gordon Conference on Atomic Physics held July 4-8, 1983 at Colby-Sawyer College, New London, New Hampshire. It was attended by 147 conferees representing the U.S., England, Canada, France, West Germany, Finland, The Netherlands, Sweden, and Italy. There were 20 foreign scientists in attendance. Of the U.S. participants, 41 represented government laboratories, 4 came from industrial laboratories, and the remainder from universities.

The scientific sessions covered many aspects of atomic physics and the related area of spin-aligned hydrogen and helium. The atomic sessions included Collisions and Dielectronic Recombinations, Photoionization of Atoms and Molecules, Cooling and Trapping of Atoms and Ions, New Results in Spectroscopy and Molecular and Continuum States. A copy of the program is attached. The scientific content of the conference was intense and stimulating and many favorable comments were provided by the participants. In addition, the conference brought together scientists working in diverse areas of atomic physics as well as spin-aligned hydrogen and helium.

The conference was a great success and the Air Force Office of Scientific Research's financial support played a strong role in this success.

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GORDON CONFERENCE ON ATOMIC PHYSICS

July 4-8, 1983

Colby-Sawyer College, New London, New Hampshire

Scientific sessions with names of invited speakers are listed below. Participants are urged to present recent research results at the poster session. Afternoons will be open for discussion and recreation except for the late afternoon poster session on Monday and the 4:00 PM session on Wed.

SESSIONS

Mon. morning. Photoionization of Atoms: D. Ederer (Chair), S. Harris, A. Starace, T. McIlrath, F. Wuilleumier, M. Krause, W. Cooke.

Mon. afternoon. Poster Session.

Mon. evening. Collisions and Dielectronic Recombination: S. Shafroth (Chair), G. Dunn, J. Wm. McGowan, P. Dittner, J. Tanis, S. Shafroth, D. Pritchard.

Tues. morning. Cooling and Trapping I: H. Dehmelt (Chair), R. Van Dyck, G. Werth, W. Itano, W. Phillips, J. Prodan, D. Larson.

Tues. evening. New Results in Spectroscopy: H. Metcalf (Chair), S. Chu, W. Parkinson, I. Lindgren, D. Kleppner, J. Francon.

Wed. morning. Spin-Aligned Hydrogen and Helium: D. Kleppner (Chair), T. Greytak, W. Hardy, I. Silvera, D. Lee, F. Laloé.

Wed. afternoon (4:00 PM). Spin-Aligned Hydrogen II (Workshop): I. Silvera (Chair), A. Lagendijk, M. Ristig, S. Jaakkola, P. Entel, A. Greenberg, B. Verhaar.

Wed. evening. Molecular Continuum States: A. Temkin (Chair), M. Morrison, J. Dehmer, V. McKoy, C. Noble, L. Collins, P. Langhoff, M. Le Dourneuf.

Thurs. morning. Cooling and Trapping II: R. Marrus (Chair), D. Church, V. Balykin, M. Prior, V. Minogin, A. Dalgarno.

Thurs. evening. Banquet
Fusion: Spin-Polarized Nuclei and Charge Transfer:
J. Cecchi (Chair), J. Cecchi, W. Happer and R. Knize,
C. Bottcher.

Fri. morning. Photoionization of Atoms and Molecules: R. Freeman (Chair), D. Shirley, C. Greene, T. Lucatorto, J. Berkowitz, M. O'Halloran, Z. Levine.

Alphabetical List of Speakers for 1983 Gordon Conference on Atomic Physics
(as of June 17, 1983)

- V. I. Balykin (Moscow): "Laser Velocity Monochromatization and Cooling of Atoms in Beam; Study of Diffusion Effects"
- J. Berkowitz (Argonne): Title to be announced
- J. Berlinsky and W. Hardy (UBS): "Experiments on Spin-Polarized Atomic Hydrogen at UBC"
- C. Bottcher (Oak Ridge): "Numerical Studies of Atomic Collisions"
- J. Cecchi (Princeton Plasma Lab): "Spin-polarized Fusion" the confluence of Atomic, Nuclear, and Plasma Physics"
- S. Chu (Bell Labs): "Measurement of the Positronium $1\ ^3S_1 - 2\ ^3S_1$ Two-Photon Transition"
- D. Church (Texas A & M): "Charge Transfer to Stored, Multi-Charged Ions"
- L. Collins (Los Alamos): "Linear algebraic and optical potential approaches to electron scattering"
- W. Cooke (USC): "Two Electron Atoms"
- A. Dalgarno (Harvard): "Charge Transfer of Multiply-Charged Ions at Low Energies"
- J. Dehmer (Argonne): "Resonance Processes in Molecular Photoionization"
- P. Dittner (Oak Ridge): "Dielectronic recombination of high-charge-state heavy ions"
- G. Dunn (JILA): "Electron-Ion Collisions: Resonances"
- P. Entel (Duisberg): "Equilibrium and Non-Equilibrium Condensation of Spin-Polarized Atomic Hydrogen"
- J. Francon: "Optical Interferometer Data in Support of Local Theories"
- A. Greenberg (CNRS, Grenoble): "Experiments on Spin-Aligned Hydrogen at Grenoble"
- C. Greene (LSU): "Electron Correlations: the Long and the Short of it"
- T. Greytak (MIT): "Experiments on Spin-Polarized Atomic Hydrogen at MIT"
- W. Happer and R. Knize (Princeton): "Polarization of Nuclear Spins by Laser Optical Pumping"
- S. Harris (Stanford): "Laser Techniques for XUV Spectroscopy"
- W. Itano (NBS): "Spectroscopy of Laser Cooled and Trapped Ions"
- S. Jaakkola (Helsinki): "Accumulation, Pressurization, and Densities of Spin Polarized Atomic Hydrogen"
- M. Krause (Oak Ridge): "The Study of Atomic Vapors with the Aid of Synchrotron Radiation: A Horn of Plenty"
- F. Lalo   (Paris): "Quantum Properties of Spin-Polarized ^3He "
- P. Langhoff (Indiana): "Aspects of Atomic and Molecular Photoionization"
- D. Larson (U. Virginia): "Spectroscopy of Trapped Negative Ions"
- M. Le Dourneuf and Vo Ky Lan (Observatoire de Paris): "Excitation and Rearrangement of Molecular Systems by Electron and Photon Impact"

- D. Lee (Cornell): "NMR-Induced Recombination in Spin-Polarized Hydrogen"
- Z. Levine (Pennsylvania): "Dielectric Effects in Molecular Photoemission"
- I. Lindgren (Chalmers): "Atomic Hyperfine Interaction-Theory and Experiments"
- T. Lucatorto (NBS): "Vacuum Ultraviolet Absorption Studies on Excited Atoms and Ions"
- J. Wm. McGowan (U. Western Ontario): "Dielectronic Recombination for Atoms and Molecules"
- T. McIlrath (U. Maryland): To be announced.
- V. McKoy (Caltech): "Studies of Molecular Photoionization Processes"
- V. Minogin (Moscow): "Radiative Traps for Cold Atoms"
- M. Morrison (U. Oklahoma): "An Overview of Theoretical Techniques for the Calculation of Continuum States in Electron Molecule Scattering"
- C. Noble (Daresbury): "R-matrix Methods for Molecular Continuum States"
- M. O'Halloran (Stanford): "Alignment of Molecular Photoions"
- W. Parkinson (Harvard): "Recent Laboratory Measurements of Atomic Parameters at the Center for Astrophysics"
- W. Phillips (NBS): To be announced
- M. Prior (Berkeley): "Trapped Multicharged Ion Collision Studies"
- D. Pritchard (MIT): "A Simple Physical Theory of Rotationally Inelastic Collisions"
- J. Prodan (NBS): "Atomic Beam Velocity Modification Using Laser Light"
- M. Ristig (U. Köln): "Atomic Impurities in Liquid Helium"
- S. Shafroth (North Carolina): "Relationship Between Resonant and Nonresonant Transfer and Excitation (RTE&NTE) and Dielectronic Recombination: Si^{11+} on He"
- D. Shirley (Berkeley): "High Energy Photoemission for Atoms and Molecules"
- I. Silvera (Harvard): "Spin Polarized Atomic Hydrogen"
- A. Starace (Nebraska): "Recent Theoretical Progress in Atomic Photoionization"
- J. Tanis (U. Western Michigan): "Resonant Electron Transfer and K-Shell Excitation in Ion-Atom Collisions"
- R. Van Dyck (U. Washington): "A Precision Measurement of m_p/m_e using Stored Ion Spectroscopy"
- B. Ver Haar (Eindhoven): "Theoretical Aspects of Spin-Relaxation in Stabilized Atomic Hydrogen"
- G. Werth (U. Mainz): "High Resolution Microwave Spectra from Electrodynamically Confined Ions"
- F. Wuilleumier (LURE): "Collisional Ionization, Photoionization, and Autoionization in Laser Excited Atomic Vapors"

Session Chairmen

- | | | |
|----------------------------|----------------------|----------------------|
| J. Cecchi (Princeton) | D. Kleppner (MIT) | S. Shafroth (N.C.) |
| H. Dehmelt (U. Washington) | R. Marrus (Berkeley) | A. Temkin (NASA) |
| D. Ederer (NBS) | H. Metcalf (SUNY) | I. Silvera (Harvard) |

GORDON RESEARCH CONFERENCES

ATOMIC PHYSICS

July 4-6, 1983

Colby-Sawyer College, New London, NH

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